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EXAMINER	
DAY, HERNG DER	
ART UNIT	PAPER NUMBER
2128	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/736,232	SIRRINE, SCOTT A.	
	Examiner	Art Unit	
	Herng-der Day	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 9-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 9-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to Applicant's Amendment ("Amendment") to Office Action dated September 25, 2006, faxed December 26, 2006.

1-1. Claims 1, 5, 6, 7, and 12 have been amended. Claims 1-7 and 9-21 are pending.

1-2. Claims 1-7 and 9-21 have been examined and rejected.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5, 7, 9, 10, 12-15, and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eaton Corporation (hereinafter "Eaton"), "Eaton Truck Components Bulletin, TRIB-9701", 1997, including the DAA program (The screen captures of DAA program was provided by Applicant on July 14, 2005 in response to Requirement for Information - 37 C.F.R. §1.105, dated May 16, 2005, as "DOS-Based Driveline Angle Analyzer (DAA) Screen Captures" (hereinafter "Screen Captures")), in view of Creger, U.S. Patent 5,848,371 issued December 8, 1998.

3-1. Regarding claim 1, Eaton discloses a method of determining at least one of a torsional acceleration and an inertia of a vehicle driveline configuration comprising the step of

entering measurements for the vehicle driveline configuration into a graphical user interface program (Screen Captures, on Driveline Dimension Entry Screen, page 4, user may enter the measurements, e.g., ANGLE, PHASE, LENGTH, or AIR BAG HEIGHT, of the vehicle driveline configuration).

Eaton fails to expressly disclose determining an inertia of the vehicle driveline based on the entered measurements. Nevertheless, Eaton discloses using the Eaton DAA program to determine u-joint acceleration based on the entered measurements in troubleshooting drivetrain noise and vibration.

Creger discloses a method for determining an estimate of a driveline torque using equations 8-11 (column 6, lines 26-28) because driveline torque is a useful value to monitor in predicting future problems (column 1, lines 13-24). Specifically, as shown in equation 9, torque (driveline inertia) is determined by multiplying I_{MN} and ACCELERATION, where I_{MN} is a calculation based on predetermined lumped inertia constants and gear reductions. In other words, the relationship between torque (driveline inertia) and ACCELERATION is I_{MN}, which is a calculated constant based on predetermined constants. Creger also discloses the diagnostic controller 110 records or stores the ECM information in a memory for download into an external computer for future analysis (column 2, lines 36-39).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Eaton to incorporate the teachings of Creger to obtain the invention as specified in claim 1 because torque (driveline inertia) is proportional to the already determined acceleration (i.e., after acceleration has been determined by the Eaton DAA program the torque (driveline inertia) can be determined by multiplying I_{MN} and the determined

acceleration, where I_{MN} is a calculated constant based on predetermined constants as taught by Creger) and driveline torque is a useful value to monitor in predicting future problems as suggested by Creger.

3-2. Regarding claim 2, Eaton further discloses the step of selecting a representative vehicle driveline configuration from a plurality of driveline configurations prior to entering measurements of the vehicle driveline configuration into the graphical user interface program (Eaton, for example, three vehicle driveline configurations have been disclosed in the last two pages of Eaton Bulletin for user to select).

3-3. Regarding claim 3, Eaton further discloses the graphical user interface program includes a corrective mode for enabling a user to interactively change the entered measurements of the vehicle driveline configuration to determine one of the torsional acceleration and the inertia of the vehicle driveline configuration (Screen Captures, on Driveline Dimension Entry Screen, page 4, user may change the entered measurements, e.g., ANGLE, PHASE, LENGTH, or AIR BAG HEIGHT, of the vehicle driveline configuration and receive the RESULTS of the changed accelerations).

3-4. Regarding claim 4, Eaton further discloses the step of printing a worksheet to aide a user in entering of the measurements for the vehicle driveline configuration (Screen Captures, on Driveline Dimension Entry Screen, page 4, user may print a blank entry screen as a worksheet by clicking PRINT (F7) icon).

3-5. Regarding claim 5, Eaton further discloses the step of printing results from the determination of the inertia for the vehicle driveline configuration (Screen Captures, Report Printout Screen, page 5).

3-6. Regarding claim 7, Eaton discloses a method of diagnosing and correcting driveline angles and lengths of components of a vehicle driveline, comprising the steps of:

selecting a representative vehicle driveline from a plurality of saved driveline configurations (Screen Captures, on Documentation Entry Screen, page 3, user may load data file; Eaton, for example, three vehicle driveline configurations have been disclosed in the last two pages of Eaton Bulletin for user to select);

entering measurements of the vehicle driveline into a graphical user interface program (Screen Captures, on Driveline Dimension Entry Screen, page 4, user may enter the measurements, e.g., ANGLE, PHASE, LENGTH, or AIR BAG HEIGHT, of the vehicle driveline configuration);

determining [an inertia] (a torsional acceration) of the vehicle driveline based on the entered measurements of the driveline angles and lengths of the components (Screen Captures, RESULTS on Driveline Dimension Entry Screen, page 4); and

enabling a user to interactively change the entered measurements of the vehicle driveline to determine one of the torsional acceleration and the inertia of the vehicle driveline (Screen Captures, on Driveline Dimension Entry Screen, page 4, user may change the entered measurements, e.g., ANGLE, PHASE, LENGTH, or AIR BAG HEIGHT, of the vehicle driveline configuration and receive the RESULTS of the changed accelerations).

Eaton fails to expressly disclose determining an inertia of the vehicle driveline based on the entered measurements of the driveline angles and lengths of the components. Nevertheless, Eaton discloses using the Eaton DAA program to determine u-joint acceleration based on the

entered measurements of the driveline angles and lengths of the components in troubleshooting drivetrain noise and vibration.

Creger discloses a method for determining an estimate of a driveline torque using equations 8-11 (column 6, lines 26-28) because driveline torque is a useful value to monitor in predicting future problems (column 1, lines 13-24). Specifically, as shown in equation 9, torque (driveline inertia) is determined by multiplying I_{MN} and ACCELERATION, where I_{MN} is a calculation based on predetermined lumped inertia constants and gear reductions. In other words, the relationship between torque (driveline inertia) and ACCELERATION is I_{MN}, which is a calculated constant based on predetermined constants. Creger also discloses the diagnostic controller 110 records or stores the ECM information in a memory for download into an external computer for future analysis (column 2, lines 36-39).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Eaton to incorporate the teachings of Creger to obtain the invention as specified in claim 2 because torque (driveline inertia) is proportional to the already determined acceleration (i.e., after acceleration has been determined by the Eaton DAA program the torque (driveline inertia) can be determined by multiplying I_{MN} and the determined acceleration, where I_{MN} is a calculated constant based on predetermined constants as taught by Creger) and driveline torque is a useful value to monitor in predicting future problems as suggested by Creger.

3-7. Regarding claim 9, Eaton further discloses the step of printing a worksheet to aide a user in entering of the measurements for the vehicle driveline (Screen Captures, on Driveline

Dimension Entry Screen, page 4, user may print a blank entry screen as a worksheet by clicking PRINT (F7) icon).

3-8. Regarding claim 10, Eaton further discloses the step of printing results from the determination (Screen Captures, Report Printout Screen, page 5).

3-9. Regarding claim 12, Eaton discloses a method of determining one of a torsional acceleration and a driveline inertia of a desired vehicle driveline configuration, comprising the steps of:

selecting a vehicle driveline configuration from a plurality of driveline configurations (Eaton, for example, three vehicle driveline configurations have been disclosed in the last two pages of Eaton Bulletin for user to select);

entering measurement data for the desired vehicle driveline configuration (Screen Captures, on Driveline Dimension Entry Screen, page 4, user may enter the measurements, e.g., ANGLE, PHASE, LENGTH, or AIR BAG HEIGHT, of the vehicle driveline configuration);

Eaton fails to expressly disclose determining the driveline inertia of the desired vehicle driveline configuration and displaying a driveline inertia of the desired vehicle driveline configuration based on the entered measurements. Nevertheless, Eaton's Driveline Dimension Entry Screen provides the capability to display results and Eaton's DAA program has determined the u-joint acceleration in troubleshooting drivetrain noise and vibration.

Creger discloses a method for determining an estimate of a driveline torque using equations 8-11 (column 6, lines 26-28) because driveline torque is a useful value to monitor in predicting future problems (column 1, lines 13-24). Specifically, as shown in equation 9, torque (driveline inertia) is determined by multiplying I_{MN} and ACCELERATION, where I_{MN} is a

calculation based on predetermined lumped inertia constants and gear reductions. In other words, the relationship between torque (driveline inertia) and ACCELERATION is I_{MN}, which is a calculated constant based on predetermined constants. Creger also discloses the diagnostic controller 110 records or stores the ECM information in a memory for download into an external computer for future analysis (column 2, lines 36-39).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Eaton to incorporate the teachings of Creger to obtain the invention as specified in claim 12 because torque (driveline inertia) is proportional to the already determined acceleration (i.e., after acceleration has been determined by the Eaton DAA program the torque (driveline inertia) can be determined by multiplying I_{MN} and the determined acceleration, where I_{MN} is a calculated constant based on predetermined constants as taught by Creger) and driveline torque is a useful value to monitor in predicting future problems as suggested by Creger.

3-10. Regarding claim 13, Eaton further discloses the step of enabling a user to interactively change the entered measurements of the desired vehicle driveline configuration to determine the torsional acceleration of the vehicle driveline configuration (Screen Captures, on Driveline Dimension Entry Screen, page 4, user may change the entered measurements, e.g., ANGLE, PHASE, LENGTH, or AIR BAG HEIGHT, of the vehicle driveline configuration and receive the RESULTS of the changed accelerations).

3-11. Regarding claim 14, Eaton further discloses the step of printing a worksheet to aide a user in entering of the measurements for the desired vehicle driveline configuration (Screen Captures,

on Driveline Dimension Entry Screen, page 4, user may print a blank entry screen as a worksheet by clicking PRINT (F7) icon).

3-12. Regarding claim 15, Eaton further discloses the step of printing results from the determination of the driveline inertia for the desired vehicle driveline configuration (Screen Captures, Report Printout Screen, page 5).

3-13. Regarding claim 17, Eaton further discloses selecting a representative vehicle driveline from a plurality of saved driveline configurations, wherein the step of selecting includes comparing a picture of a selectable driveline configuration to the vehicle driveline (Screen Captures, on Documentation Entry Screen, page 3, user may load data file; Eaton, for example, three vehicle driveline configurations have been disclosed in the last two pages of Eaton Bulletin for user to compare and select).

3-14. Regarding claim 18, Eaton further discloses wherein the step of selecting includes comparing a picture of a selectable driveline configuration to the vehicle driveline (Eaton, for example, three vehicle driveline configurations have been disclosed in the last two pages of Eaton Bulletin for user to compare).

3-15. Regarding claim 19, Creger further discloses wherein the driveline inertia is a drive inertia (a second lumped driveline inertia, column 2, lines 60-61).

3-16. Regarding claim 20, Creger further discloses wherein the driveline inertia is a coast inertia (the lumped driveline inertia, column 3, lines 13-15).

3-17. Regarding claim 21, Eaton further discloses selecting a representative vehicle driveline from a plurality of saved driveline configurations (Eaton, for example, three vehicle driveline configurations have been disclosed in the last two pages of Eaton Bulletin for user to select).

4. Claims 6, 11, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teaching of Eaton Corporation (hereinafter "Eaton"), "Eaton Truck Components Bulletin, TRIB-9701", 1997, including the DAA program (The screen captures of DAA program was provided by Applicant on July 14, 2005 in response to Requirement for Information - 37 C.F.R. §1.105, dated May 16, 2005, as "DOS-Based Driveline Angle Analyzer (DAA) Screen Captures" (hereinafter "Screen Captures")), and Creger, U.S. Patent 5,848,371 issued December 8, 1998.

4-1. Regarding claim 6, Eaton discloses a method of determining at least one of a torsional acceleration and an inertia of a vehicle driveline configuration in claim 1. Eaton also discloses a Driveline Dimension Entry Screen at page 4 including RESULTS of acceleration values and a SAVE (F1) icon.

Eaton fails to expressly disclose the step of saving results from the determination of the inertia for the vehicle driveline configuration as an image file. However, saving a screen as an image file is well known to one of ordinary skill in the relevant art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Eaton to incorporate the well known method of saving as an image file to obtain the invention as specified in claim 6 because saving a screen as an image file is only one of many well known saving file options.

4-2. Regarding claim 11, Eaton discloses a method of diagnosing and correcting driveline angles and lengths of components of a vehicle driveline in claim 7. Eaton also discloses a Driveline Dimension Entry Screen at page 4 including RESULTS of acceleration values and a SAVE (F1) icon.

Eaton fails to expressly disclose the step of saving results from the determination as an image file. However, saving a screen as an image file is well known to one of ordinary skill in the relevant art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Eaton to incorporate the well known method of saving as an image file to obtain the invention as specified in claim 11 because saving a screen as an image file is only one of many well known saving file options.

4-3. Regarding claim 16, Eaton discloses a method of determining one of a torsional acceleration and a driveline inertia of a desired vehicle driveline configuration in claim 12. Eaton also discloses a Driveline Dimension Entry Screen at page 4 including RESULTS of acceleration values and a SAVE (F1) icon.

Eaton fails to expressly disclose the step of saving results from the determination of the driveline inertia for the vehicle driveline configuration as an image file. However, saving a screen as an image file is well known to one of ordinary skill in the relevant art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Eaton to incorporate the well known method of saving as an image file to obtain the invention as specified in claim 16 because saving a screen as an image file is only one of many well known saving file options.

Applicant's Arguments

5. Applicant argues the following:

5-1. Claim Rejections - 35 U.S.C. § 112

(1) "Accordingly, claims 5 and 6 have been amended to delete the references to torsional acceleration." (Page 7, paragraph 2, Amendment).

5-2. Claim Rejections - 35 U.S.C. § 102

(2) "Applicant notes that independent claim 7 has been amended to delete the recitation of "determining ... a torsional acceleration." With this amendment, the cited reference does not anticipate independent claim 7." (Page 7, paragraph 4, Amendment).

5-3. Claim Rejections - 35 U.S.C. § 103

(3) "The Examiner contends that Creger teaches that "as shown in equation 9, driveline inertia is determined by multiplying I_{MN} and ACCELERATION" (Id. Page 6, lines 12-14) However, and in direct contrast to the assertions by the Examiner, Creger teaches in Equation 9 that <u>torque</u> may be calculated by multiplying I_{MN} and ACCELERATION. (See Creger column 5, lines 56-60, demonstrating that Equation 9 provides "$T_{DERIVELINE\text{-}INERTIA\text{-}N}$ is the torque.."" (Page 8, paragraph 5, Amendment).

(4) "Accordingly, driveline inertia is not taught in Creger to be proportional to acceleration, which is the basis for the Examiner's incorrect conclusion that Equation 9 of Creger teaches determining inertia." (Page 9, paragraph 1, Amendment).

(5) "However, this specific teaching of Creger clearly demonstrates that Creger teaches that inertia is a constant for the purposes of the torque determination of Creger" (Page 9, paragraph 2, Amendment).

(6) "Creger does not teach determining an inertia based upon measurements, but based upon <u>known constants</u> for a known driveline configuration." (Page 9, paragraph 3, Amendment).

(7) "Further, the contention that inertia is proportional to acceleration is incorrect since inertia is a property of the specific configuration of an item, including geometry and mass, and acceleration of any driveline is purely dependent upon the change in speed and will never be proportional to inertia. (Also note that in Equation 10 of Creger, inertia is multiplied by acceleration)." (Page 9, paragraph 4, Amendment).

(8) "Moreover, the Examiner has not identified any motivation within either Creger or Eaton for the proposed combination, but has supplied a motivation as "to obtain the invention of claim 1 because driveline inertia is proportional to the already determined acceleration."" (Page 9, paragraph 4, Amendment).

(9) "Importantly, one of skill in the art would recognize that torsional acceleration is the first derivative of speed, and would not likely rely upon Creger for any teachings in light of this glaring error." (Page 10, paragraph 1, Amendment).

Response to Arguments

6. Applicant's arguments have been fully considered.

6-1. Applicant's argument (1) is persuasive. The rejections of claims 5 and 6 under 35 U.S.C. 112, second paragraph, in Office Action dated September 25, 2006, have been withdrawn.

6-2. Applicant's argument (2) is persuasive. The rejections of claims 7, 9, 10, and 18 under 35 U.S.C. 102(b) in Office Action dated September 25, 2006, have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made, as detailed in sections **3-6** to **3-8** and **3-14** above.

6-3. Applicant's arguments (3) - (7) are not persuasive. As described at paragraph [0004], "an inertial component is generated and is commonly known as driveline inertia, which is measured in foot pounds (ft-lbs)." Based on the unit used for the disclosed driveline inertia, it is obvious the disclosed driveline inertia in this instant application represents a torque. In other words, the torque "$T_{DERIVELINE\text{-}INERTIA\text{-}N}$" taught by Creger in Equation 9 is a function of ACCELERATION that is calculated and based essentially on measurements. Accordingly, the torque "$T_{DERIVELINE\text{-}INERTIA\text{-}N}$" anticipates the argued "driveline inertia".

6-4. Applicant's argument (8) is not persuasive. Applicant only quotes part of the motivation and argues the quoted part of the motivation. One of ordinary skill in the art at the time the invention was made would like to modify the teachings of Eaton to incorporate the teachings of Creger because torque (driveline inertia) is proportional to the already determined acceleration (i.e., after acceleration has been determined by the Eaton DAA program the torque (driveline inertia) can be determined by multiplying I_{MN} and the determined acceleration, where I_{MN} is a calculated constant based on predetermined constants as taught by Creger) and driveline torque is a useful value to monitor in predicting future problems as suggested by Creger. In other words, the motivation to combine is that a useful value to monitor (e.g., driveline torque) in predicting future problems of a powertrain system is ready to be determined according to Creger's teaching after the Eaton DAA program has determined the acceleration.

6-5. Applicant's argument (9) is not persuasive. As long as one of skilled in the art may readily recognize a glaring error and know how to correct the glaring error (e.g., torsional acceleration is the first derivative of speed), the glaring error would not be a problem any more for one of skilled in the art.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Herng-der Day whose telephone number is (571) 272-3777. The Examiner can normally be reached on 9:00 - 17:30.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: (571) 272-2100.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kamini S. Shah can be reached on (571) 272-2279. The fax phone numbers for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Herng-der Day
March 11, 2007 H.D.

KAMINI SHAH
SUPERVISORY PATENT EXAMINER